Amendments to the Specification:

Please amend the title, as it appears on the International Publication Page, as follows:

WAVEGUIDE ~~DEVICE~~ ELEMENT USING PHOTONIC CRYSTAL

Please amend the paragraph beginning on page 14, line 11 as follows:

FIG. 6 is a schematic band diagram, taken on the YZ plane, including the incident light to the photonic crystal 11 shown in FIG. 3. More specifically, it is a schematic view illustrating on the band diagram the propagation in the case where the plane wave with a normalized frequency a/λ_0 is made to enter the end face 11a (parallel with the XY plane) of the photonic crystal 11 shown in FIG. 3 obliquely at an incident angle θ. For simplification, the inclination of the incident light is limited within the YZ plane. When the refractive index of a homogeneous material (for example, the air) that is in contact with the incident end face 11a is given as n, a band 21 of the homogeneous material can be expressed by a sphere (a circle in the YZ plane) with a

radius $= n \cdot (a/\lambda_0)(2\pi/a)$.

By creating the drawing, it is possible to obtain a coupled band on the side of the photonic crystal 11. In FIG. 6, there are corresponding points ~~27 and 28~~ 28 and 27 on a first band 23 and a second band 22, so that electromagnetic waves corresponding to the respective bands propagate through the photonic crystal 11. In FIG. 6, an arrow 24 indicates the direction of the incident light, an arrow 25 indicates the energy propagation direction of the propagation light in the second band, and an arrow 26 indicates the energy propagation direction of the propagation light in the first band. Further, in FIG. 5, the energy travel direction is a normal direction of the band surface 12.

Please amend the paragraph beginning on page 15, line 2 as follows:

From FIG. 5, it can be seen that, in order to make the travel direction of the propagating electromagnetic wave energy parallel with the Z axis, it is necessary to use for propagation, for example, a point 12a on which the inclination of the band surface 12

becomes parallel with the XY plane. FIGs. ~~7 and 7B~~ 7A and 7B show the Brillouin zone in the photonic crystal 11 shown in FIG. 3. FIGs. 7A and 7B indicate the positions at which the inclination of the band surface 12 of the band diagram as shown in FIG. 5 is parallel with the XY plane. FIG. 7A is a plan view taken on the XY plane, and FIG. 7B is a perspective view. As shown in FIGs. 7A and 7B, the points on which the inclination of the band surface 12 of the band diagram as shown in FIG. 5 is parallel with the XY plane are located on each of lines A, B1, B2, B3, B4, C1, C2, C3 and C4 in the Brillouin zone owing to the symmetry. In the present embodiment, among these lines, propagation by B1, B2, B3, B4, C1, C2, C3 and C4 on the Brillouin zone boundaries will be utilized.

Please amend the paragraph beginning on page 25, line 16 as follows:

FIG. 11 is a schematic band diagram, taken on the YZ plane, showing adjacent photonic crystals with respect to a wavelength λ_0. The photonic ~~crystals~~ crystal and a photonic crystal cladding shown in FIG. 11 have a period c and a period d, respectively (d > c). Inside the photonic crystal having a period c, propagation light in the Z direction on the Brillouin zone boundary is propagated (in the first band). In FIG. 11, an arrow 500 indicates an energy direction of the propagation light. Further, a band 501 for the wavelength λ_0 also is shown in the figure. In [[a]] the photonic crystal cladding (with a period d) [[11]], a region in which no band is present in the Z direction (a band gap 502) is generated, so that there is no band corresponding to the propagation inside the photonic crystal (with a period c). Thus, the propagation light of the photonic crystal (with a period c) is not coupled to the photonic crystal cladding (with a period d). In other words, the confinement is achieved.

Please amend the paragraph beginning on page 33, line 22 as follows:

As the plane waves corresponding to points on the lines B1, B2, B3 and B4 shown in FIGs. 7A and [[7b]] 7B, the following wave vectors k_1, k_2, k_3 and k_4 were set as wave vectors.

Please amend the paragraph beginning on page 34, line 12 as follows:

$\cancel{\lambda_0 = 2\pi / (kx_1^2 + ky_1^2 + kz^2)^{0.5}}$ $\underline{\lambda_0 = 2\pi / (kx_1^2 + ky_1^2 + kz_1^2)^{0.5}}$